

Health Information Exchange (HIE) Learning Series

HIE-101
Foundation and Current State of HIE

11/17/2014

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Acknowledgement

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CalEMSA expresses its appreciation to CalHIPSO for allowing it to use and modify the course content to fit the needs of this **HIE Boot Camp**.

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Agenda

- Introduction
- Upcoming Seminars
 - HIE-102 – Governance and Stakeholder Engagement
 - HIE-103 – Privacy and Security
 - HIE-104 – Technology and Sustainability
- Course Overview and Purpose
- Course Outline
 - Foundation/Purpose of HIE
 - HIE Types
 - Application of Various HIE Types
 - HIE Components and Services
 - Meaningful Use Stages and HIE
 - Key Value-Added Benefits
- Conclusion and Summary
- Questions and Answers

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Course Overview and Purpose

The *Foundation and Current State of HIE* course addresses the diversity and breadth of HIE including a high level overview of the various forms of HIE and how those forms can be adapted to meet the needs of an individual provider, organization or community. The course addresses the unique value of an HIE from a provider and organizational perspective based on Meaningful Use and other practice specific activities.

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Learning Objectives

- At the conclusion of this HIE-101 course, participants will be able to:
 - Identify the types of HIE as they exist today;
 - Determine which of the HIE types is best suited to their setting;
 - Map the components of HIE and how those apply to their setting;
 - Understand the meaningful use stages and the objectives related directly to HIE; and
 - Identify other value-added services provided within the HIE space.

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Course Objective #1

Identify the types of HIE as they exist today.

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Foundation / Purpose of HIE

"Health information exchange (HIE) is the transmission of healthcare-related data among facilities, health information organizations (HIO) and government agencies according to national standards. To meet requirements, HIE technology must enable reliable and secure transfer of data among diverse systems and also facilitate access and retrieval data. The purpose of HIE development is to improve healthcare delivery and information gathering."

– Margaret Rouse
TechTarget IT Encyclopedia

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Foundation / Purpose of HIE

"Electronic health information exchange (HIE) allows doctors, nurses, pharmacists, other health care providers and patients to appropriately access and securely share a patient's vital medical information electronically – improving the speed, quality, safety and cost of patient care."

– Office of the National
Coordinator for Health IT

"[Interoperability is] the ability of two or more systems to exchange information and to use the information that has been exchanged mutually."

– IEEE

Step beyond "information exchange"

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Foundation / Purpose of HIE

"Transmitting patient data electronically without attending to the business processes surrounding data capture, translation, and transmission has the potential to increase patient risks and healthcare costs. Data accessibility, reliability, and accuracy are critical factors in obtaining the trust of stakeholders, including consumers, and in sustaining long-term data exchange on a large scale. Accordingly, it is imperative for regional health information organizations (RHIOs) to hard-wire patient safety and quality of care measures into the HIE's processes and systems."

– American Health Information
Management Association

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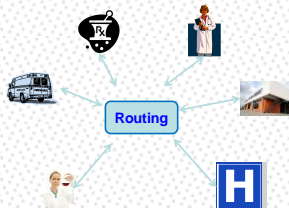
HIE Types

- Data Storage Types
 - Results Delivery Model
 - Aggregated Model
 - Federated Model
 - Hybrid Model
- Organizational Types
 - Private / Enterprise HIE
 - Public / Community HIE
 - Hybrid

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Results Delivery Model

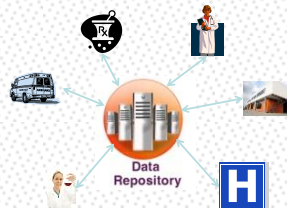


DEFINITION: An Message Delivery Model, through the use of data interfaces, accepts data in various formats from those systems and routes it to the intended target, perhaps with format / content translation to match capabilities of recipient.

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Aggregated Data Model

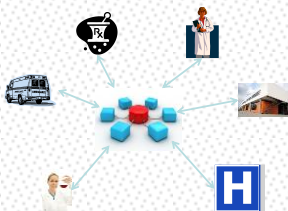


DEFINITION: An Aggregated Model, through the use of data interfaces with participant systems, accepts data in various formats from those systems and stores it in a centralized environment where it can be accessed by anyone with proper security levels.

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Federated Data Model

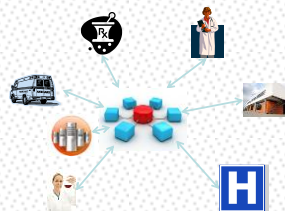


DEFINITION: A Federated Model, through the use of data interfaces with participant systems, transfers data in various formats from one participant system to another participant system or extracts data on an as-needed basis to populate a portal. Limited or no data is retained in this model.

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Hybrid Data Model



DEFINITION: A Hybrid Model leverages both an aggregated and federated solution providing a mechanism for centralized storage of data as well as a point to point communication capability when connecting other HIEs or controlled sources of data.

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Enterprise & Community HIE

- **Enterprise HIE** – Typically created by an organization to allow internal connectivity and communication of data between organizational users. A key element is that the source of the funding for purchase and implementation is born by the organization providing the service.
- **Community HIE** – Typically created to support a community or region and as community stakeholders come together to develop the environment. Community HIEs have a variety of funding mechanisms including fee-for-service, grant-funded, health plan- or stakeholder-funded and/or other public funding.
- **Hybrid HIE** – A combination of a public and private, enterprise and community HIE typically supporting both the community and individual organizations. The hybrid model leverages the strengths of both models.

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Transmission Models



- Data transmission (conduit only)
- Data transmission according to standards, imposing security or other requirements
- Data transmission with access, perhaps to provide transformation or intelligent routing
- Data transmission and federated access via record location, but not storage
- Data transmission and aggregation, providing storage and enabling analytics

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What's Next?

Learning Health System?

- The ultimate goal of ONC's Interoperability Roadmap
- Collection of interoperable systems, supported by activities such as HIE
 - Beyond simple EHRs or HIE

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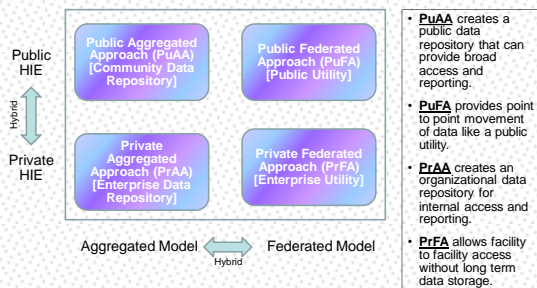
Course Objective #2

Determine which of the HIE types is best suited to your setting.

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Application of Various HIE Types



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How about EMS?

- May benefit from utility models in providing pre-hospital health information
- May benefit from repository models in accessing critical information in the field
- Benefits from all models in that information is available at the right place, at the right time

Ultimately depends upon the purpose for the exchange and/or access of health information.

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Course Objective #3

Map the components of HIE and how those apply to the setting.

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HIE Components and Services

Aggregated Model

- Clinical Portal provides access to the patient information in the repository. Typically includes:
 - Patient demographics, vital signs
 - Laboratory and radiology results
 - Medications or medication history
 - Allergies and other alerts
 - Encounters, diagnoses and procedures
 - Problem list or history of present illness
 - Immunizations
 - Insurance information

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HIE Components and Services

Aggregated Model (continued)

- Longitudinal Record – aggregation of information
- Secure Messaging Environment - messaging to support provider to provider or patient to provider
- Notifications – patient alerts sent to provider based on configuration
- Reporting or Business Intelligence – the ability to produce repository-wide reports or reports based on provider/facility
- Patient Portal / Personal Health Record

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HIE Components and Services

Federated Model

- Clinical Portal – may not be present as data may flow to the practice EHR
 - Similar data elements as Aggregated Model, may be limited to Continuity of Care Document (CCD) or other standard format
- Longitudinal Record – *logical* aggregation of information
- Secure Messaging
- Patient Portal / Personal Health Record

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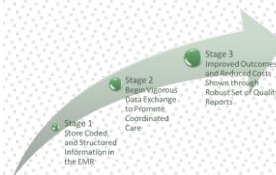
Course Objective #4

Understand the Meaningful Use Stages and the objectives related directly to HIE.

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Meaningful Use Stages and HIE



- Stage 1 – capture structured information in EHRs
- Stage 2 – exchange structured information among providers and patients
- Stage 3 – improve outcomes through analytics

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Meaningful Use Stages and HIE

1. Computerized provider order entry
2. e-Prescribing
3. Record demographics
4. Record vitals
5. Record smoking status
6. Use clinical decision support
7. Patients view, download, transmit health information
8. Clinical summaries to patients
9. Protect electronic health information
10. Incorporate lab results
11. Generate patient lists
12. Reminders for follow-up care
13. Patient educational resources
14. Medication reconciliation
15. Transmit care summaries for transitions of care
16. Report immunizations
17. Secure messaging with patients
18. Report syndromic data
19. Record electronic notes
20. Imaging results
21. Record family history
22. Report cancer cases
23. Report other registry cases

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Additional MU Considerations

- Incentive program requires the use of CEHRT
 - While most HIE is not certified, it may better deliver on the intent of "meaningful use"
- For example...
 - Longitudinal record may be preferable to receiving care summaries
 - PHR or HIE-based patient portal may be preferable to multiple portals for each caregiver
 - Alerts based on longitudinal record may be preferable to those in an EHR

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Course Objective #5

Identify other value-added services provided within the HIE space.

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Key Value-Added Benefits

Provider HIE Benefits

- Lab / radiology orders and results
 - Single conduit for orders and results
 - Reduces practice cost (fewer interfaces)
- Longitudinal record
 - More timely access to critical information
 - More complete information than in any practice EHR alone
 - Supports case management, medical home, care teams

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Key Value-Added Benefits

Provider HIE Benefits

- Public Health
 - Mandatory reporting
 - Immunizations, syndromic surveillance, lab results
- Population health
 - Business intelligence and data analytics
 - Population management

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Key Value-Added Benefits

Provider HIE Benefits

- Reporting
 - Clinical quality measures (including in support of meaningful Use)
 - PQRI and other programs

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Key Value-Added Benefits

Ultimately...

- A more complete picture of a patient's data for the provider;
- Easier access to health information for the consumer; and
- Better health for the community.

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Conclusion and Summary

- Foundation / Purpose of HIE
- HIE Types
- Application of Various HIE Types
- HIE Components and Services
- Meaningful Use Stages and HIE
- Key Value-Added Benefits

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Questions???

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